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09/862,696	05/23/2001	Kimio Amemiya	107156-00068	2341

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ARENT FOX KINTNER PLOTKIN & KAHN
1050 CONNECTICUT AVENUE, N.W.
SUITE 400
WASHINGTON, DC 20036

EXAMINER
COLON, GERMAN

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/862,696	Applicant(s) AMEMIYA ET AL.	
	Examiner German Colón	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,6,13-15,19,21,27,32-39,41,44-47 and 49-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *19,21,27,32-34,36-39,45-47,57,59,60 and 67* is/are allowed.

6)☒ Claim(s) *3,6,13-15,35,41,44,49-56,58,61-66 and 68-71* is/are rejected.

7)☒ Claim(s) *50,62,65 and 66* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The Amendment, filed on February 20, 2003, has been entered and acknowledged by the Examiner.

2. Cancellation of claims 1, 2, 4, 5, 7-12, 16-18, 20, 22-26, 28-31, 40, 42, 43 and 48 has been entered.

3. Addition of claims 52-71 has been entered.

Terminal Disclaimer

4. The terminal disclaimer filed on February 20, 2003 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent No. 6,344,715 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

6. Claim 50 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the

claim(s) in independent form. Claim 69, from which claim 50 is dependent, recites the limitation of "the priming particle generating member being formed of an UV region light emissive material having persistence characteristics allowing emission for 0.1 msec or more".

7. Claims 62, 65 and 66 are objected to because of the following informalities:

Claim 62, in line 10, recites the limitation of "a pruning particle", which is consider as a typographical error. For the purpose of examination said limitation corresponds to "a priming particle".

Claim 65, in line 13, recites the limitation of "direction fox partitioning". For the purpose of examination it will be consider as "direction for partitioning".

Claim 66, in line 12, recites the limitation of "column direction ox the row direction". For the purpose of examination it will be consider as "column direction or the row direction".

The Examiner suggests Applicant to review all the claims for these and other minor informalities.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 35 and 58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 35 recites the limitation "said interstice" in line 3. There is insufficient antecedent basis for this limitation in the claim. The Examiner notes than some of the claims from which claim 35 is dependent support this limitation (e.g. claim 67), however, several claims fail to support it (e.g. claim 66).

Claim 58 recites the limitation "said layer *containing* the material" in line 17. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Examiner's Comments

11. In regards to the rejection of independent claims 52-71 below, the Examiner notes that the references disclose a standard structure of a PDP comprising: a front substrate and a back substrate on opposite sides of a discharge space, a plurality of row electrode pairs extending in a row direction and arranged in a column direction on the front substrate to form display lines, a protective dielectric layer provided on a face of the front substrate facing the discharge space, a plurality of column electrodes extending in the column direction and arranged in the row direction on the back substrate to form a unit light emitting area in the discharge space at each intersection with the row electrode pair, and a phosphor layer on a face of the back substrate facing the discharge space.

12. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noborio et al. (US 6,066,923) in view of Yamakawa (JP 09-263756).

Noborio discloses the claimed invention (see Examiner's Comments in view of Fig. 7 and Col. 1, lines 38-61) except for the limitation of "comprising a priming particle generating member made up of an UV light emissive phosphor".

However, in the same field of endeavor, Yamakawa discloses a phosphor for a PDP comprising a priming particle generating member made up on an UV light emissive phosphor with the purpose of providing a PDP with excellent luminous efficiency and high luminance. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the PDP of Noborio with the phosphor disclosed by Yamakawa in order to provide a PDP with excellent luminous efficiency and high luminance.

Noborio-Yamakawa discloses the UV light emissive phosphor extending in the row direction at each site opposite the row electrode pairs (see Fig. 7 of '923 in view of Yamakawa).

13. Claims 3, 6, 50, 53 and 69 rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto et al. (US 5,952,782) in view of Yamakawa (JP 09-263756).

Regarding claim 53, Nanto discloses the claimed invention (see Examiner's Comments in view of Fig. 1B and Col. 5, lines 38-60) except for the limitation of "comprising a priming particle generating member made up of an UV light emissive phosphor".

However, in the same field of endeavor, Yamakawa discloses a phosphor for a PDP, comprising a priming particle generating member made up on an UV light emissive phosphor

with the purpose of providing a PDP with excellent luminous efficiency and high luminance. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the PDP of Nanto with the phosphor disclosed by Yamakawa in order to provide a PDP with excellent luminous efficiency and high luminance.

Nanto-Yamakawa discloses the UV light emissive phosphor extending in the column direction at each site opposite the row electrode pairs (see Fig. 1B of '782 in view of Yamakawa).

Regarding claim 69, Nanto discloses a PDP (see Examiner's Comments in view of Fig. 1B and Col. 5, lines 38-60) comprising a partition wall **29** disposed between the front substrate and the back substrate having a phosphor layer on a front face of the partition wall opposing the front substrate and facing the discharge.

Nanto-Yamakawa discloses a priming particle generating member, made up of an UV light emissive phosphor, being placed on a front face of the partition wall opposing the front substrate and facing the discharge, said UV light emissive phosphor having persistence characteristics allowing emission for 0.1 msec or more.

The Examiner notes that Yamakawa discloses the UV light emitting phosphors being SrB_4O_7:Eu or $BaSi_2O_5$:Pb (see Tables 1 and 2) which have the claimed persistence characteristics. Same reasons for combining stated in claim 53 apply.

Referring to claim 3, Nanto-Yamakawa discloses the UV light emissive phosphor having persistence characteristics allowing emission for 0.1 msec or more.

Referring to claim 6, Nanto-Yamakawa discloses a light absorption layer provided at each position opposing a non-lighting area (see Figs. 5, 7 and 8 of '782).

Referring to claim 50, claim 50 is rejected over the reasons stated in the rejection of claim 69.

14. Claims 54, 55, 63, 64 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano et al. (US 6,008,582) in view of Yamakawa (JP 09-263756).

Regarding claim 54, Asano discloses a PDP (see Examiner's Comments in view of Fig. 1 and Col. 4, lines 10-41) comprising a partition wall disposed between the front substrate and the back substrate **3** including transverse walls **54** extending in the row direction and vertical walls **1** extending in the column direction. Asano is silent regarding the phosphor layer of said PDP.

However, in the same field of endeavor, Yamakawa discloses a phosphor for a PDP, comprising a priming particle generating member made up on an UV light emissive phosphor with the purpose of providing a PDP with excellent luminous efficiency and high luminance. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the PDP of Asano with the phosphor disclosed by Yamakawa in order to provide a PDP with excellent luminous efficiency and high luminance.

Asano-Yamakawa discloses a priming particle generating member made up on an UV light emissive phosphor provided between the front substrate and the transverse wall of the partition wall (see Figs. 1, 4 and 5 of '582 in view of Yamakawa).

Regarding claim 55 and 64, claim 55 and 64 are rejected over the reasons stated in the rejection of claim 54 above. Asano-Yamakawa discloses a priming particle generating member made up on an UV light emissive phosphor provided between the front substrate and the vertical wall of the partition wall (see Figs. 1, 4 and 5 of '582 in view of Yamakawa).

Regarding claim 63, claim 63 is rejected over the reasons stated in the rejection of claim 54 above. Asano-Yamakawa discloses a priming particle generating member made up on an UV light emissive phosphor provided between the front substrate and the transverse wall of the partition wall (see Figs. 1, 4 and 5 of '582 in view of Yamakawa).

Regarding claim 65, claim 65 is rejected over the reasons stated in the rejection of claim 54. Asano-Yamakawa discloses a stripe patterned partition wall disposed between the front substrate and the back substrate extending in the column direction wherein said priming particle generating member is provided at a site opposing main bodies of row electrodes (see Figs. 1, 4 and 5 of '582 in view of Yamakawa).

15. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amemiya et al. (US 5,742,122) in view of Yamakawa (JP 09-263756).

Amemiya discloses a PDP (see Examiner's Comments in view of Fig. 2 and Col. 4, lines 50-67 and Col. 5, lines 18-20) comprising a stripe patterned partition wall disposed between the front substrate and the back substrate and extending in the column direction, wherein a row electrode of each of the row electrode pair includes a main body **Sa** extending in the row direction and a protruding portion **S** protruding from the main body in the column direction. Amemiya is silent regarding the phosphor layer of said PDP.

However, in the same field of endeavor, Yamakawa discloses a phosphor for a PDP, comprising a priming particle generating member made up on an UV light emissive phosphor with the purpose of providing a PDP with excellent luminous efficiency and high luminance. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was

made to provide the PDP of Amemiya with the phosphor disclosed by Yamakawa in order to provide a PDP with excellent luminous efficiency and high luminance.

Amemiya-Yamakawa discloses a priming particle generating member made up on an UV light emissive phosphor provided between the front substrate and the back substrate in positions opposing the main bodies of the row electrodes.

16. Claims 13-15, 35, 41, 49, 58, 61, 62 and 68 rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto et al. (US 5,952,782) in view of Van Slooten (US 6,229,582).

Regarding claim 58, Nanto discloses a PDP (see Examiner's Comments in view of Fig. 1B and Col. 5, lines 38-60) comprising a dielectric layer **24** overlaying column electrodes **A** between the back substrate and the phosphor layer **28**. Nanto fails to disclose a priming particle generating member provided at a site facing the discharge area.

However, in the same field of endeavor, Van Slooten discloses a PDP comprising a priming particle generating member with the purpose of reducing the number of electrons and ions of the plasma that are lost at the walls of the discharge area and lowering the sustain current needed to maintain the plasma, thus reducing the energy consumption of the device (see Col. 2, lines 1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the priming particle generating member disclosed by Van Slooten in the PDP of Nanto, in order to reduce the number of electrons and ions of the plasma that are lost at the walls of the discharge area and lowering the sustain current needed to maintain the plasma, thus reducing the energy consumption of the device.

Nanto-Van Slooten discloses a priming particle generating member made up of a secondary electron emissive layer formed in combination with the dielectric layer (see Col. 1, lines 58-60 of '582).

Referring to claim 13, Nanto-Van Slooten discloses a partition wall **29** provided between the front substrate and the back substrate, wherein said secondary electron emissive layer is provided on a side wall-face of the partition wall (see Fig. 1 of '782 in view of Col. 1, lines 58-60 of '582).

Referring to claim 14, claim 14 is rejected over the reasons stated in the rejection of claim 13.

Referring to claim 15, Nanto-Van Slooten discloses said secondary electron emissive layer being placed between the back substrate and the phosphor layer (see Fig. 1 of '782 in view of Col. 1, lines 58-60 of '582).

Regarding claim 61, claim 61 is rejected over the reasons stated in the rejection of claim 13 above. Nanto-Van Slooten discloses said priming member disposed at a site opposing the row electrode pairs, and facing toward the discharge space (see Col. 1, lines 58-60 of '582).

Regarding claim 62, claim 62 is rejected over the reasons stated in the rejection of claim 61 above. Nanto-Van Slooten discloses said priming member disposed at a site opposing the row electrode pairs, and facing toward the discharge space (see Col. 1, lines 58-60 of '582).

Regarding claim 68, claim 68 is rejected over the reasons stated in the rejection of claim 58. Nanto-Van Slooten discloses said priming member provided in contact with the discharge space between adjacent unit light emitting areas and an additional portion provided at a portion

of the dielectric layer (see Fig. 1 of '782 in view of Col. 1, lines 58-60 and Col. 5, lines 8-14 of '582).

Referring to claims 35 and 41, Nanto-Van Slooten discloses a light absorbing layer provided at a portion of the dielectric layer (see Figs. 5, 7 and 8 of '782).

Referring to claim 49, Nanto-Van Slooten discloses the priming particle generating member including a material having a work function of 4.2 eV or less (see Col. 2, lines 57-63 of '582).

17. Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurai (US 6,057,643) in view of Van Slooten (US 6,229,582).

Kurai discloses a PDP (see Examiner's Comments in view of Fig. 1 and Col. 2, lines 39-67) comprising a discharge gas including a mixed inert gas containing about 10% of a xenon gas (see Col. 5, line13). Kurai fails to disclose a priming particle generating member provided at a site facing the discharge area.

However, in the same field of endeavor, Van Slooten discloses a PDP comprising a priming particle generating member with the purpose of reducing the number of electrons and ions of the plasma that are lost at the walls of the discharge area and lowering the sustain current needed to maintain the plasma, thus reducing the energy consumption of the device (see Col. 2, lines 1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the priming particle generating member disclosed by Van Slooten in the PDP of Kurai, in order to reduce the number of electrons and ions of the plasma

that are lost at the walls of the discharge area and lowering the sustain current needed to maintain the plasma, thus reducing the energy consumption of the device.

18. Claims 44, 66, 71, 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto-Yamakawa as applied to claim 53 above, and further in view of Van Slooten (US 6,229,582).

Regarding claim 66, Nanto-Yamakawa discloses the claimed invention except for the limitation of "the priming particle generating member further including a material having a work function smaller than that of the dielectric layer".

However, in the same field of endeavor, Van Slooten discloses a PDP comprising a priming particle generating member having a work function smaller than that of the dielectric layer with the purpose of reducing the number of electrons and ions of the plasma that are lost at the walls of the discharge area and lowering the sustain current needed to maintain the plasma, thus reducing the energy consumption of the device (see Col. 2, lines 1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the priming particle generating member disclosed by Van Slooten in the PDP of Nanto-Yamakawa, in order to reduce the number of electrons and ions of the plasma that are lost at the walls of the discharge area and lowering the sustain current needed to maintain the plasma, thus reducing the energy consumption of the device.

Regarding claims 44 and 71, claims 44 and 71 is rejected over the reasons stated in the rejection of claim 66.

Referring to claim 50, Nanto-Yamakawa-Van Slooten discloses a priming particle generating member, made up of an UV light emissive phosphor, being placed on a front face of the partition wall opposing the front substrate and facing the discharge, said UV light emissive phosphor having persistence characteristics allowing emission for 0.1 msec or more.

Referring to claim 51, Nanto-Yamakawa-Van Slooten discloses said priming particle generating member further including a material having a work function of 4.2 eV or less (see Col. 2, lines 57-63 of '582).

Allowable Subject Matter

19. Claims 19, 21, 27, 32-34, 36-39, 45-47, 57, 59, 60 and 67 are allowed.

20. The following is a statement of reasons for the indication of allowable subject matter:

The Examiner notes that the Prior Art of Record discloses a PDP (see Examiner's Comments) comprising a priming particle generating member being made up of a UV light emitting phosphor layer and/or a secondary electron emissive material facing the discharge space.

Regarding claim 57, the references of the Prior Art of Record fail to teach or suggest the combination of the limitations as set forth in claim 57, and specifically comprising the limitation of "the phosphor layer contains the material having a coefficient of secondary electron emission higher than that of the dielectric".

Regarding claim 59 and 60, claims 59 and 60 are allowable for the reasons given in claim 57. By providing the UV light emitting phosphor layer with the material having an efficient of

secondary electron emission higher than that of the dielectric, a PDP capable of preventing a false discharge to improve the quality of displayed images is provided.

Referring to claim 67, the references of the Prior Art of Record fail to teach or suggest the combination of the limitations as set forth in claim 67, and specifically comprising the limitation of "a communication element provided for communicating between the interior of said interstice and the interior of the discharge spaces, wherein the priming particle generating member is placed in said interstice".

Referring to claims 19, 21 and 27, claims 19, 21 and 27 are allowable for the reasons given in claim 59 (and 60), because of their dependency status from claim 59 (and 60).

Referring to claims 32-34, 36-39 and 45-47, claims 32-34, 36-39 and 45-47 are allowable for the reasons given in claim 67, because of their dependency status form claim 67.

Response to Arguments

21. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 703-305-5987. The examiner can normally be reached on Monday thru Friday, from 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 703-305-4794. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gc
June 11, 2003

NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800